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ABSTRACT

According to Taiwan's Teacher Preparation Law, anyone who has met the following requirements must pass certification examinations and internship to become a qualified vocational school teacher: graduation from a normal university or teacher college or other college or university with a major in a program designed to train vocational school teachers. A transcript evaluation approach is also in use. The preservice teacher preparation curriculum has three principal components: general/liberal coursework, technical/specialty coursework, and pedagogical/professional coursework. To help inservice vocational teachers develop their competencies, educational authorities offer many inservice professional training and development opportunities. In recent years, vocational teachers have been encouraged to make industry visits during summer breaks and take skill tests. Some problems confronting technical/technological and vocational education (TVE) teachers and vocational teacher education have been identified. The problem of an overabundance of qualified teachers in public vocational schools but a shortage in private vocational schools must be solved. More rational accreditation or evaluation of teacher preparation programs should be sought to ensure the high vocational teacher quality. TVE teachers must be required to have work experience in their specialization area to reflect industry and business needs effectively. (A Chinese version is attached.) (Contains six references.) (YLB)

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TECHNOLOGICAL AND VOCATIONAL TEACHER EDUCATION IN TAIWAN, R.O.C.

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Paper presented at
the Taiwan-Australia Conference on Vocational Education and Training,
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ABSTRACT

Based upon a literature review and the authors' notions, this paper describes and criticizes technical/technological and vocational teacher education (afterwards, technical/technological and vocational education is called TVE) in Taiwan, R.O.C. (henceforth, called Taiwan or the R.O.C.). After presenting the context of TVE schooling, the characteristics of TVE teachers, the characteristics and governance of vocational teacher education programs, and contrasting the public expectations for with the emerging challenges to TVE, this paper identifies some problems confronting and TVE teachers and vocational teacher education. It is found that: (1) The problem of an overabundance of qualified teachers in public vocational schools but shortage in private vocational schools should be solved. (2) More rational accreditation or evaluation of teacher preparation programs should be sought to assure the high vocational teacher quality. (3) TVE teachers must be required to have work experience or its equivalency in their specialization area to effectively reflect the needs of industry and business. (4) More effective communication is needed in the search for a consensus regarding TVE teacher qualification and teacher education.

CONTEXT OF TVE SCHOOLING

In Taiwan, nearly 100% of all school age children attend six years of elementary school and three years of junior high school in a nine-year system of compulsory education. Beyond the compulsory education, there are three branches of schools which admit junior high school graduates. These three branches are senior high schools, senior vocational schools, and junior colleges. Senior high school is the usual route for students planning to continue on to four-year university or college study. In the 1994 school year, the ratio between the number of senior high school students and the number of senior vocational school students was 31.9% to 68.1% [1]. Senior vocational school graduates and junior college graduates may separately take an entrance examination for admission to institutes of technology for four-year-program students and two-year-program students. Senior vocational school graduates may also pursuit to be admitted to a junior college for its two-year-program

students.

TVE is understood to be an integral part of general education, a means of preparing for an occupational field, and an aspect of continuing education [2]. In terms of occupational preparation and continuing education, the educational programs offered in the senior vocational schools, junior colleges, and institutes of technology are normally considered to comprise TVE in Taiwan (see Table 1). The goal of senior vocational schools is to initiate the development of entry-level skilled personnel while junior colleges aim to cultivate mid-level skilled manpower, and institutes of technology concentrate on the high-level skilled workforce. Thus, TVE is a key to the nation's economic development and social health, and TVE teacher education programs are a vital component. The purpose of this paper is to describe and criticize teacher education in TVE in Taiwan. Although the teaching force in three-level TVE will be described, in this paper, more attention will be paid to senior vocational school teacher preparation.

CHARACTERISTICS OF TVE TEACHERS

Qualifications of teachers

According to the "Teacher Preparation Law," revised in 1994, anyone who has met the following requirements must pass certification examinations and internship to become a qualified vocational school teacher: graduation from a normal university or teacher college, or other university or college with a major in a program designed to train vocational school teachers. In addition, anyone who has met one of the following requirements and intends to become a qualified teacher in a junior college or institute of technology must submit an application together with his/her publications (or works) on specialized subjects to the educational authorities for screening. An exception is that anyone intending to become a teaching assistant is not subject to the publication requirement.

1. Teaching assistant:
   (1) earn a bachelor's degree from a university or college with a good academic performance record; or
   (2) graduate from a junior college and have working experience at an academic institute for at least two years with a good performance record.
2. Lecturer:
   (1) earn a master's degree from a university or college with a good academic performance record; or
   (2) earn a bachelor's degree and serve as a teaching assistant for at least four years with a good performance record and specialized publications; or
   (3) earn a bachelor's degree and serve as a research assistant at an educational institute or a professional agency for at least six consecutive years with remarkable contribution and with specialized publications.
3. Associate professor:
   (1) earn a doctoral degree from a graduate school with specialized publications;
   (2) earn a master's degree and undertake research at an educational institute or a

professional agency for at least four consecutive years with a remarkable contribution and with specialized publications; or

(3) serve as a lecturer for at least three years with a good performance record and specialized publications.

4. Professor:

(1) serve as an associate professor for at least three years with a good performance record and specialized publications; or

(2) earn a doctoral degree and undertake research at an educational institute or a professional agency for at least four consecutive years with creativity or an invention of great importance [1].

Teaching employment:

On average, senior vocational school teachers teach about 18 to 19 hours per week and 285 days (including in-term weekends, breaks and holidays) per year. Lecturers, associate professors and professors in junior colleges and institutes of technology respectively teach at least ten, nine, and eight hours per week and 226 days (including in-term weekends, breaks and holidays) per year.

There is a set of nation-wide salary standards and schedules for teacher advancement at public schools, universities and colleges. These teacher salary schedules are based on educational level and years of experience (basically with a one step increase in salary for each year of experience). Private schools normally follow the standard in formulating their own teacher salary schedules. According to the salary standards, the basic pay scale for public school teachers is based on the same standards used for civil service employees. In addition to the basic pay, teachers are paid a certain amount as a research allowance, making their earnings slightly higher than those of other civil service employees. The higher earnings for public school teachers show society's respect for their time-honored social status and are intended to be an encouragement to devote themselves in their teaching. At present, a novice public TVE teacher, teaching assistant, lecturer, associate professor, or professor earn respectively at least NT$ 34,795 (about AU$ 1,634), 37,475 (about AU$ 1,759), 47,685 (about AU$ 2,239), 65,505 (about AU$ 3,075), or 80,205 (about AU$ 3,765) monthly.

The teachers in TVE schools, colleges and institutes can be divided into two groups--general course teachers and professional course teachers. At the senior vocational school level, the ratio between the number of general course teachers and the number of professional course teachers is some 1:2. At the post-secondary level (i.e., junior colleges and institutes of technology), the ratio slightly decreases as the level increases. In the 1960's and 1970's, recurring shortages of senior vocational school teachers characterized the labor market. Currently, an increase in the supply and a decline in the demand have created an overabundance of teachers in a number of popular programs and teaching fields.

CHARACTERISTICS AND GOVERNANCE OF VOCATIONAL TEACHER EDUCATION PROGRAMS

Characteristics of institutes and certification

The K-12 teacher education in Taiwan has been divided into the following two levels: (1) teacher colleges designed to train teachers for kindergartens and primary schools; and (2) normal universities designed to train teachers for secondary schools. Both teacher colleges and normal universities basically admit senior secondary graduates to receive a four-year on-campus education, one-year teaching internship, and teaching job placement. In order to balance the supply of and demand for teachers, there is an established number of entrants per year which is determined by the government. During their four-year on-campus education, most students enjoy a tuition-waiver and partial living expenses. At present, there are nine teacher colleges and three normal universities in Taiwan. All these colleges and universities are public (national/municipal). Two normal universities, the National Taiwan Normal University (NTNU) and the National Changhua University of Education, have been providing senior-vocational-school graduates with baccalaureate senior-vocational-school teacher preparation programs in the fields of industry and commerce. It should be noted that a transcript evaluation approach (i.e., where the government reviews an applicant's transcript and if the applicant has already become a substitute teacher and his/her course credits satisfy government-designated minimal course credit requirements, the applicant will be considered for certification) has been employed together with the above approved program approach (i.e., where a teacher preparation program is reviewed by the government and if the program is approved, an applicant graduating from the program will be considered for certification). Thus, in 1989, it was found that only some 30% of inservice vocational teachers graduated from normal universities. In addition, many "substitute" teachers are currently in private senior vocational schools because they are not "qualified."

The "Teacher Preparation Law" revised in 1994 established new avenues of teacher training. Under the new law, all public and private universities and colleges which have approved colleges, departments, graduate institutes and/or programs specializing in education may participate in teacher training. The new teacher education programs (including those offered at teacher colleges and normal universities) are basically financed by students themselves, with full-public-subsidy and partial aid available to some students who are members of minorities, are willing to teach in some out-of-the-way areas, or in teaching fields which lack teachers. All of the graduates are required to pass the initial teacher certification examination (i.e., educational experience review), to satisfactorily complete one year of internship (containing summer-break orientation, supervised practice teaching, winter-break workshops and both formative and summative evaluations by a teacher preparation institute, the school in which the practice teacher placed, and an inservice teacher training center), and to pass the final teacher certification examination (i.e., pass both formative and summative evaluations) before they obtain the qualified teacher certificate (see Figure 1).

With such a certificate, a graduate may be employed by a primary or secondary school after the teacher qualification review committee of the school approves his/her application. The certificate tends to be a "lifelong" license because the government has encouraged teachers to enroll in formal college coursework or inservice training but has not yet required them to continuously renew their credentials.

Curriculum for preservice teacher preparation

The preservice teacher preparation curriculum has three principal components: general/liberal coursework, technical/specialty coursework, and pedagogical/professional coursework. Satisfactory completion of at least 128 semester credits is one of the critical graduation requirements for all four-year undergraduate students. Since a minimum of 20 credits of designated technical coursework and a minimum of 20 credits of specified pedagogical coursework are mandated in the current secondary teacher certification requirements, the curriculum offerings of preservice vocational teacher preparation programs have contained this coursework. Table 2 shows a list of the technical coursework and the pedagogical coursework required for those who intend to be qualified teachers in a program of electronics in a senior vocational-industrial school. Under the newly-revised "Teacher Preparation Law," the pedagogical coursework has been altered and increased to 26 credits. The technical coursework has also been revised and may be increased to be raised to 30 credits.

As shown in Table 2, a two-semester-long period of practice teaching (also called student teaching) is required for preservice vocational teachers in their senior year. Typically, seniors in this course are required to go through some kind of course-design, observational and field experience for vocational school teaching. Preservice vocational teachers involved in student teaching are supervised by faculty from their vocational teacher education programs as well as by experienced teachers in the vocational schools in which they are placed.

Upon satisfactory completing their four-year on-campus education (including student teaching), preservice vocational teachers are placed in vocational schools as practice teachers (also called interns) based upon their performance record and choice. Upon satisfactorily completing the one-year internship, practice teachers may simply continue teaching at the same school.

Inservice professional training and development

In order to help inservice vocational teachers to continue to develop their competencies, educational authorities offer many inservice professional training and development opportunities such as short-term workshops and master's degree-track or non-degree-track graduate study. In recent years, vocational teachers have also been encouraged to make industry visits during the summer breaks and take skill tests (i.e., occupational competency examinations) which are handled by the Employment and Vocational Training Administration, Council of Labor Affairs. Many of these opportunities are free of charge

for inservice teachers. Incentives to encourage vocational teachers to participate in those ongoing professional training and development are usually salary-based.

PROBLEMS CONFRONTED AND FUTURE PROSPECTS

TVE teachers have always been expected to provide their students with accurate and up-to-date instruction. They must have relevant skills so that they can equip their students with competencies in order to satisfy industry and business demands. Thus, the goals of vocational teacher preparation education are to equip preservice teachers with state-of-the-art technical knowledge, a sound background in general education, and pedagogical competencies that will help students to effectively learn in the classroom/laboratory/field setting [3].

TVE in Taiwan has confronted at least the following three emerging challenges: (1) In order to maintain its global economic competitiveness, Taiwan has to upgrade local industries to compete in the international market and open the domestic market in accordance with world trends; thus TVE must train world-class workers. (2) The rapid technological advancement in a variety of industries has forced TVE to prepare workers for the shifting demands of workplace needs. (3) Junior high school graduates usually prefer senior high school to senior vocational school and five-year junior college. In addition, many students in and from senior vocational schools and junior colleges, who are supposed to be job-training-oriented, desire to go directly on to upper educational levels which lead to higher-paying jobs. Thus, TVE has to increasingly strengthen and better market its programs [4].

Contrasting the public expectations and the challenges to TVE in Taiwan, the following problems and their corresponding future prospects have been found:

1. The problem of the overabundance of qualified teachers in public vocational schools but shortage in private vocational schools should be solved.

In Taiwan, more than 60% of vocational students are in private vocational schools. Compared with public vocational schools, private vocational schools normally pay teachers less, and give teachers heavier responsibilities but less job security. As a result almost all graduates from vocational teacher preparation programs do not want to become private school teachers, and veteran teachers in private schools usually transfer to public schools when they become qualified. For example, in recent years, about 85% of graduates from vocational-industrial teacher preparation programs have had no opportunity to be placed in public vocational schools. They have chosen to be placed in junior-high-schools as industrial arts teachers, who are considered general course teachers and are required to demonstrate comprehensive technological skills, rather than in private vocational schools. As a result of the "open-door policy" for teacher preparation which is part of the newly-revised "Teacher Preparation Law," vocational teacher education will take place in a wide range of higher education institutions in the near future. Henceforth, information about vocational teacher demand and supply in a variety of programs should be continuously

sought and announced. In addition, the teaching environment of most private vocational schools should be promptly improved so that qualified teachers can be recruited and retained.

2. More rational accreditation or evaluation of teacher preparation programs should be sought to assure the high vocational teacher quality.

Government program approval and professional accreditation make up the dual track system for reviewing teacher preparation programs [5]. As mentioned earlier, all teacher education programs in Taiwan must be approved by the Ministry of Education. However, no continuous program accreditation procedures having been planned or implemented to continuously keep those programs on the right track. Thus, consecutive accreditation/evaluation procedures must follow the initial approval to assure high quality of vocational teacher education programs.

3. TVE teachers must be required to have work experience or its equivalency in their specialization area to effectively reflect the needs of industry and business.

Considered classical but still valuable, the seventh theory of Prosser and Allen's 16 theories on vocational education claims that "vocational education will be effective in proportion as the instructor has had successful experience in the application of skills and knowledge to the operations and processes he undertakes to teach." [6] However, current and emerging vocational teacher qualification requirements do not mandate work experience. This problem, coupled with the fact that TVE school subjects have been criticized as trivial, not only encourages many TVE students to enthusiastically pursue advanced studies at the upper education level, but also hinders TVE as it pursues its goal--to equip students with competencies which will enable them to be successfully employed and to have successful careers in the workplace. Thus, work or work-based experience must be mandated in TVE teacher qualification requirements and vocational teacher education curricula.

4. More effective communication is needed in the search for a consensus regarding TVE teacher qualification and teacher education.

Too much emphasis has been placed on setting general teacher education requirements and then requiring TVE teacher education to meet these same requirements. That is to say, the special needs of TVE teacher qualification and teacher education have been ignored. In order to strengthen TVE by improving TVE teacher qualification and teacher education, an expanded dialogue is needed among educational authorities, TVE educators, and leaders in industry.

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Table 1. TVE institutions in Taiwan [1].

Level and Category	Established Body	Qualifications for Admission	Period of Study	Requirements for Graduation
Secondary				
Senior Vocational School	National Provincial Municipal Private	Graduate from junior high school and pass entrance examination	3 years	Satisfactory completion of three years of schooling
Post-Secondary				
Junior College	National Municipal Private	5-year Program Graduate from junior high school and pass entrance examination	5 years	Satisfactory completion of at least 220 credits
		2-year Program Graduate from senior vocational school and pass entrance examination	2 years	Satisfactory completion of at 80 credits
		3-year Program Graduate from senior high school and pass entrance examination	3 years	Satisfactory completion of at least 106 credits
Institute of Technology	National Private	4-year Program Graduate from senior vocational school and pass entrance examination	4 years	Satisfactory completion of at least 128 credits
		2-year Program Graduate from junior college and pass entrance examination	2 years	Satisfactory completion of at least 72 credits

Notes: 1. In addition to the entrance examination which is the gateway to a school or college in Taiwan, some other channels such as recommendations based on outstanding performance have been increased.
2. The 3-year junior colleges programs will be phased out within several years.
3. Some institutes of technology offer master's and doctorate programs.

Figure 1. The procedures for obtaining a K-12 teacher certificate.

Table 2. Coursework requirements for a vocational-industrial electronics-program teacher.

Technical Course (Credits)	Pedagogical Course (Credits)
T1. Electronics (6)	P1. Introduction to Education (4)
T2. Electro-Magnetism (6)	P2. Educational Psychology (4)
T3. Electric Circuit Theory (or Fundamentals of Electric Circuits) (6)	P3. Principles & Practice of Guidance (2)
T4. Programming Language (or Introduction to Computers) (3)	P4. Principles of Instruction (2)
T5. Introduction to Microprocessors (3)	P5. Teaching Methods for Industrial Subjects (2)
T6. Linear Electronics Circuits (or Electronics Circuits) (6)	P6. Course Design for Industrial Subjects (2)
T7. Control Systems (3)	P7. Teaching Practice (4)
T8. Electronic Instruments (3)	P8. Science Education (2)
T9. Electronic Experiment (4)	P9. Mental and Educational Measurement (2)
T10. Electronic Trade Technology (including AV Electronics, Industrial Electronics, Instrument Calibration, and Microprocessors, 4 credits per course) (16)	P10. Secondary Education (2)
T11. Communication Systems (or Electronic Communication, Digital Communication) (6)	P11. Information Education (2)
T12. Microwave Communication (3)	P12. Philosophy of Education (2)
T13. Microcomputer Peripheral Devices (2)	P13. Sociology of Education (2)
T14. Microcomputer Interfaces (3)	P14. Instructional Media (2)
T15. Microcomputer Networks (2)	P15. Class Management (2)
T16. Sensors (3)	P16. Principles of Moral Education (2)
T17. Antenna Systems (2)	(Total 38 credits)
T18. Remote Survey Systems (2)	
(Total 79 credits)	

Notes: 1. Qualified electronics teachers must complete 20 credits from T1 to T18.

2. The Department of Industrial Education at NTNU has required its undergraduate students to take at least 26 credits from P1 to P16 and to take three courses from P8 to P16.

中華民國台灣地區的技職師資教育

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摘要

本文透過文獻探討和根據作者見解，描述和評論中華民國台灣地區（以下簡稱台灣）技術及職業教育（以下簡稱技職教育）的師資教育。本文先敘述技職院校的架構、技職師資的特性、職校師資教育的特性與管理，並在比較大眾對技職教育的期望和技職教育面對的衝擊之後，指陳下列技職師資及職校師資教育遭遇的問題與對應的未來展望：(1)公立職校合格教師過飽合而私立職校合格教師短缺的問題應加以解決；(2)師資培育學程有待建立更合理的認可或評鑑制度以確保品質；(3)技職院校師資應具有在其專精領域的工作經驗或相當証明，以便在教學上能有效反應業界需要；和(4)應進行更多有效的溝通，以尋求技職教師資格與師資教育方面的共識。

技職院校的架構

台灣幾乎所有的學齡兒童都接受九年義務教育——六年國小和三年國中。義務教育之後的學校呈現三分流：高中、高職和五專。高中通常是有意升進大學校院學生的進路。在 1994 學年度，高中和高職學生人數的比例是 31.9% 比 68.1%【1】。高職和專校畢業生可分別參加入學考試升進四技、二專和二技。

雖然技職教育被認爲是：普通教育中不可或缺的一部份、職業準備的機制和繼續教育的一環【2】，但是從職業準備和繼續教育的觀點看，台灣高職、專科和技術學院所提供的教育常被特指爲技職教育（見表 1），本文依此界定。高職、專科和技術學院的目的分別在培養基層、中級和高級技術人才。所以技職教育是台灣經濟發展和社會安定的關鍵之一，技職師資教育乃因而成爲此一關鍵的重點所在。本文的目的在描述和評論台灣技職教育的師資教育。文中，固然三級技職院校的師資都將述及，但本文的重點放在高職的師資培育。

技職師資的特性

教師的資格

根據 1994 年修定的「師資培育法」，畢業自師大、師院或其他大學校院職校科別之本科系，且通過教師檢定及實習合格者得爲高職合格教師。此外，符合下列專校及技術學院各級教師資格者，遇有教職缺額時應提出資格証明和專精領域的著作或作品，送請學校及教育主管機關審查。惟申請助教教職時不需提出著作。

1. 助教應具有下列資格之一：
   (1)大學或獨立學院畢業，成績優良者。
   (2)三年制專科學校畢業，曾從事與所習學科有關之研究工作、專門職業或職務二年以上；或二年制、五年制專科學校畢業，曾從事與所習學科有關之研究工作、專門職業或職務三年以上，成績優良者。
2. 講師應具有下列資格之一：
   (1)在研究院、所研究，得有碩士學位或同等學歷證書，成績優良者。
   (2)大學或獨立學院畢業，曾任助教擔任協助教學或研究工作四年以上，成績優良，並有專門著作者。
   (3)大學或獨立學院畢業，曾從事與所習學科有關之研究工作、專門職業或職務六年以上，成績優良，並有專門著作者。
3. 副教授應具有下列資格之一：
   (1)具有博士學位或其同等學歷證書，成績優良，並有專門著作者。
   (2)具有碩士學位或其同等學歷證書，曾從事與所習學科有關之研究工作、專門職業或職務四年以上，成績優良並有專門著作者。
   (3)曾任講師三年以上，成績優良並有專門著作者。
4. 教授應具有下列資格之一：
   (1)曾任副教授三年以上，成績優良，並有重要之著作者。
   (2)具有博士學位或其同等學歷證書，曾從事與所習學科有關之研究工作、專門職業或職務四年以上，有創作或發明，在學術上有重要貢獻或著作者。

教職梗概

高職教師平均每週授課基本節數 18 至 19 節，每年任教 285 天（含學期中的星期和國定等假日）。專校和技術學院的講師、副教授和教授每週至少分別授課 10 節、9 節和 8 節，每年任教 226 天（含學期中的星期和國定等假日）。

公立校院有一全國性的教師職務等級表，薪級主要根據教育程度和工作年資（基本上是一年晉一級）。私立學校通常參考此一薪資標準訂定自己的教師薪資表。公立

學校教師薪資表上的本俸係比照公務員，但教師除本俸之外另支領學術研究費，以至收入略高於公務員。教師的薪酬較公務員高代表對師道的尊崇和對投入教職的鼓勵。目前，最基層的新進公立學校教師、助教、講師、副教授和教授每月最低薪酬是新台幣 34,795 元（約 1,634 澳幣）、37,475 元（約 1,759 澳幣）、47,685 元（約 2,239 澳幣）、65,505 元（約 3,075 澳幣），和 80,205 元（約 3,765 澳幣）。

技職院校的教師可大分爲兩類——普通科目教師和專業科目教師。在高職這兩類教師的人數之比約爲 1 ： 2，在大專階段（即專校及技術學院），此一比例略爲降低（即專業科目教師比重增大）。在 1960 年和 1970 年代高職教師出現連續短缺現象，但是目前供應增多和需求減少的緣故使得高職一般類科教師出現過剩現象。

高職師資教育的特性與管理

機構與檢定的特性

台灣中小學師資教育係分爲下列兩個層級：(1)師範學院——培育幼稚園和國小教師；和(2)師範大學——培育中等學校教師。師範學院和大學基本上都招收高中、職畢業生施予四年院校教育、一年學校實習及分發教職。爲了平衡教師供需，師範院校各系招生名額均由政府核定。師範院校學生在四年院校教育中，大多享有免繳學費和生活津貼的待遇。目前台灣共有九所師院和三所師大，全都是公立的。其中有兩所師大（台灣師大和彰化師大）開設有招收高職畢業生施予學士級師資培育學程的工教系和商教系。但由於台灣目前並用成績單審查法（即政府審查教師資格送審人的成績單，依送審人修滿政府規定最低修課要求的狀況，決定授予教師証書與否）和學程認定法（即政府審查教師資格送審人是否畢業自其認定的科系，決定授予教師証書與否）。因此，在 1989 年，只有 30% 的高職在職教師是師範大學的畢業生。此外，目前私立高職有很多未登記合格的代用教師。

在 1994 年修定的新「師資培育法」廣開了師資培育的管道。所以公、私立大學校院中經核定的教育院、系、所和學程都能培育師資。新的師資教育（含師範院校所提供者）學生都以自費爲原則，只有少數族群學生、志願赴偏遠地區或在欠缺師資的科別任教的學生，得享有公費待遇。惟所有畢業生都得通過初檢（學歷檢覈）、一年實習（含暑期職前研習、擬定個人實習計畫、教學實習、撰寫專題報告、寒假研習和接受平時評量及學年評量）、及複檢（即實習平時和學年評量均及格）才能取得合格教師証書（見圖 1）。取得合格証書的畢業証書才能向有教師缺額的中小學幼稚園申請教職，並由校教評會進行審查甄選。目前這種教師証書傾向於是終身証照，因爲政府雖鼓勵在職教師參加在職進修，但並未要求教師需換証。

教師職前教育課程

普通通識、學科專門和教育專業課程通常在教師職前教育課程中三足鼎立。所有的四年制大學生至少要修滿 128 學分才能畢業。由於中等學校教師登記辦法中要求至少需有 20 個專門學分和 20 個教育學分，所以職校教師職前教育課程均涵蓋此一要求。表 2 列出培育工職電子科合格教師的專門技術和教育專業科目。惟在新「師資培育法」之下，教育專業科目已修訂且學分要求增至 26 學分，而專門技術科目也已修訂，且傾向提高至要求 30 學分。

如表 2 所示，兩學期的教學實習是在大四實施。大四學生在本科目中需經歷教材編製、職校教學觀察和試教的程序。學生在學生試教時有大學教授和職校教師督導。

準職校教師在完成四年校院教育之後依其成績和志願被分發到職校擔任實習教師。實習期滿的實習教師可自然留在原校任教職。

教師在職訓練與發展

主管教育行政機關爲了鼓勵職校在職教師持續發展能力，提供了很多在職專業訓練與發展的機會，如短期研習、碩士學位或不授予學位的研究所學分修習。近幾年，更鼓勵職校教師利用暑假赴業界訪問和參加勞委會職訓局掌理的技能檢定。鼓勵職校教師參與此等專業訓練與發展的誘因通常是薪級的提敘。

遭遇問題與未來展望

技職師資往往被期望能授予學生精確和合時宜的知能，教師應具能力的層級與類別也被期望能培養學生滿足業界需要。此外，職校師資培育的目的是要培養職前教師具有切合時需的技術、紮實的普通教育和教育專業背景，以協助學生在教室／工場／工作現場有效學習。

而台灣的技職教育也至少面對下列三種衝擊：(1)台灣爲了保持全球性經濟競爭能力，必須促使地方產業升級以便在國際市場上競爭，和開放國內市場以順應世界趨勢，因此技職教育必須培育符合世界水準的員工；(2)各種產業中快速的科技變遷正迫使技職教育要培養能適應業界變遷的員工；(3)國中畢業生升學時通常將五專和高職視爲是高中之後的第二、三種選擇，此外太多高職和專校的在學生和畢業生想直接升學，因此技職院校愈來愈有振興和推銷技職教育的必要【 4 】。

比較前述大眾對技職教育的期望和技職教育所面對的衝擊之後，至少可發現下列問

題及其對應的未來展望：

1. 公立職校合格教師過飽合而私立職校合格教師短缺的問題應加以解決。
台灣有超過60％的職校學生是在私校。和公立學校比較，私校通常支付教師較低的薪酬、賦予教師較重的責任和工作不穩定感。所以幾乎所有職校師資培育單位的畢業生都不願至私校服務，而許多私校的資深教師也在取得合格教師之後轉到公立職校任教。例如，近幾年約有85％的工職師資培育單位結業生沒能分發至公立職校實習，他／她們寧可捨私立職校而被分發到國中擔任工藝教師，但工藝教師需具有廣博的科技知能，並非大多數準工職教師所能勝任。在新「師資培育法」師資培育門户開放的政策下，職校師資教育在不久將廣佈在各大學校院。因此，職校各類科教師供需的資訊應持續獲取和宣示，而大多數私立職校的教學環境也應儘快改善以利招來和留任合格教師。

2. 師資培育學程有待建立更合理的認可或審查制度以確保品質。
政府的學程審定和專業的認可制度是評審師資培育學程的雙軌制【５】。如前所述，固然台灣所有的師資教育院系、學程都需經教育部核定方得設定，但是目前尚未規劃或實施持續性的學程認可制以確保這些院系、學程的方向與舉措適切。因此，有必要在審定之外銜接上連續性的認可／評鑑程序以確保職校師資院系、學程的品質。

3. 技職院校師資應具有在其專精領域的工作經驗或相當証明，以便在教學上能有效反應業界需要。
雖然 Prosser 和 Allen16 項職教理論中的第七項理論相當古典但仍有價值，此項理論主張：「職教的效能和教師成功應用其任教知能的工作經驗多寡成正比」【６】。目前和新訂的職校教師資格要求中並未要求工作經驗。這個問題加上技職校院學科常被批評訂得太零碎，不僅促使學生熱衷升學也不利技職教育目標（培養學生具有順利就業和長足發展的能力）的達成。因此，工作或工作本位的經驗應被列入技職教師資格要求和師資培育課程。

4. 應進行更多有效的溝通，以尋求技職教師資格與師資教育方面的共識。
台灣技職教師資格和師資教育常在設定了其他師資教育領域的要求之後，才被考慮或求取一致，亦即技職教師資格和師資教育的特色常因而被忽略。爲了使技職教師資格和師資教育的改善有助於技職教育的振興，未來需要有更多產官學之間的溝通與對話，以尋求共識。

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表1　台灣的技職院校類型【1】

層級與類別	隸屬	入學資格	修業	畢業要求
中等				
高職	國立			
	省立	畢業自國中並經	3年	修滿三年學業
	市立	入學考試錄取		
	私立			
大專	國立	五年制：		
專校	省立	畢業自國中並經	5年	修滿220學分
	私立	入學考試錄取		
		二年制：		
		畢業自高職並經	2年	修滿80學分
		入學考試錄取		
		三年制：		
		畢業自高中並經	3年	修滿106學分
		入學考試錄取		
技術學院	國立	四年制：		
	私立	畢業自高職並經	4年	修滿128學分
		入學考試錄取		
		二年制：		
		畢業自專校並經	2年	修滿72學分
		入學考試錄取		

註：1. 入學考試是升學的大道外，尚有其他升學管道（如推薦甄選）正在擴增中。

2. 三年制專校在短期內將出局。

3. 某些技術學院設有碩士、博士班。

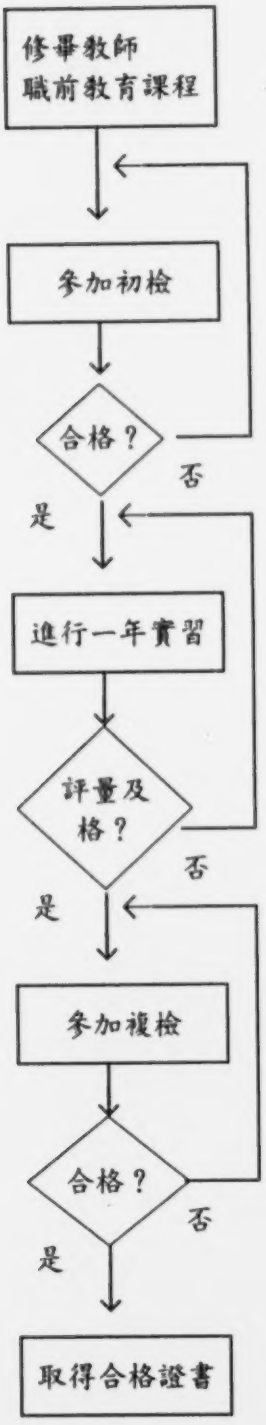

圖 1　取得中小學幼稚園合格教師證書的程序

表 2　工職電子科合格教師的修課要求

技術科目（學分）	教育科目（學分）
T 1. 電子學(6)	P 1. 教育概論(4)
T 2. 電磁學(6)	P 2. 教育心理學(4)
T 3. 電路理論(電路學)(6)	P 3. 輔導原理與實務(2)
T 4. 程式語言(計算機概論)(3)	P 4. 教學原理(2)
T 5. 微處理機概論(3)	P 5. 工業科目教學法(2)
T 6. 線性電子電路(電子電路)(6)	P 6. 工業科目教材編製法(2)
T 7. 控制系統(3)	P 7. 教學實習(4)
T 8. 電子儀表(3)	P 8. 科學教育(2)
T 9. 電子實驗(4)	P 9. 心理與教育測驗(2)
T 10. 電子行業技術(視聽電子、工業電子、儀表校正、微處理機各四學分)(16)	P 10. 中等教育(2)
T 11. 通訊原理(電子通訊、數位通訊)(6)	P 11. 資訊教育(2)
T 12. 微波通訊(3)	P 12. 教育哲學(2)
T 13. 微電腦週邊設備(2)	P 13. 教育社會學(2)
T 14. 微電腦界面(3)	P 14. 教學媒體(2)
T 15. 微電腦網路(2)	P 15. 班級實務(2)
T 16. 感測器(3)	P 16. 德育原理(2)
T 17. 天線系統(2)	
T 18. 遙測系統(2)	
合計　79學分	合計　38學分

註：1. 合格電子科教師必須從T 1. 至T 18. 中修滿20學分。
2. 台灣師大工教系要求其大學部學生從P 1. 至P 16. 中修滿26學分，並從P 8. 至P 16. 九科中至少修三科。